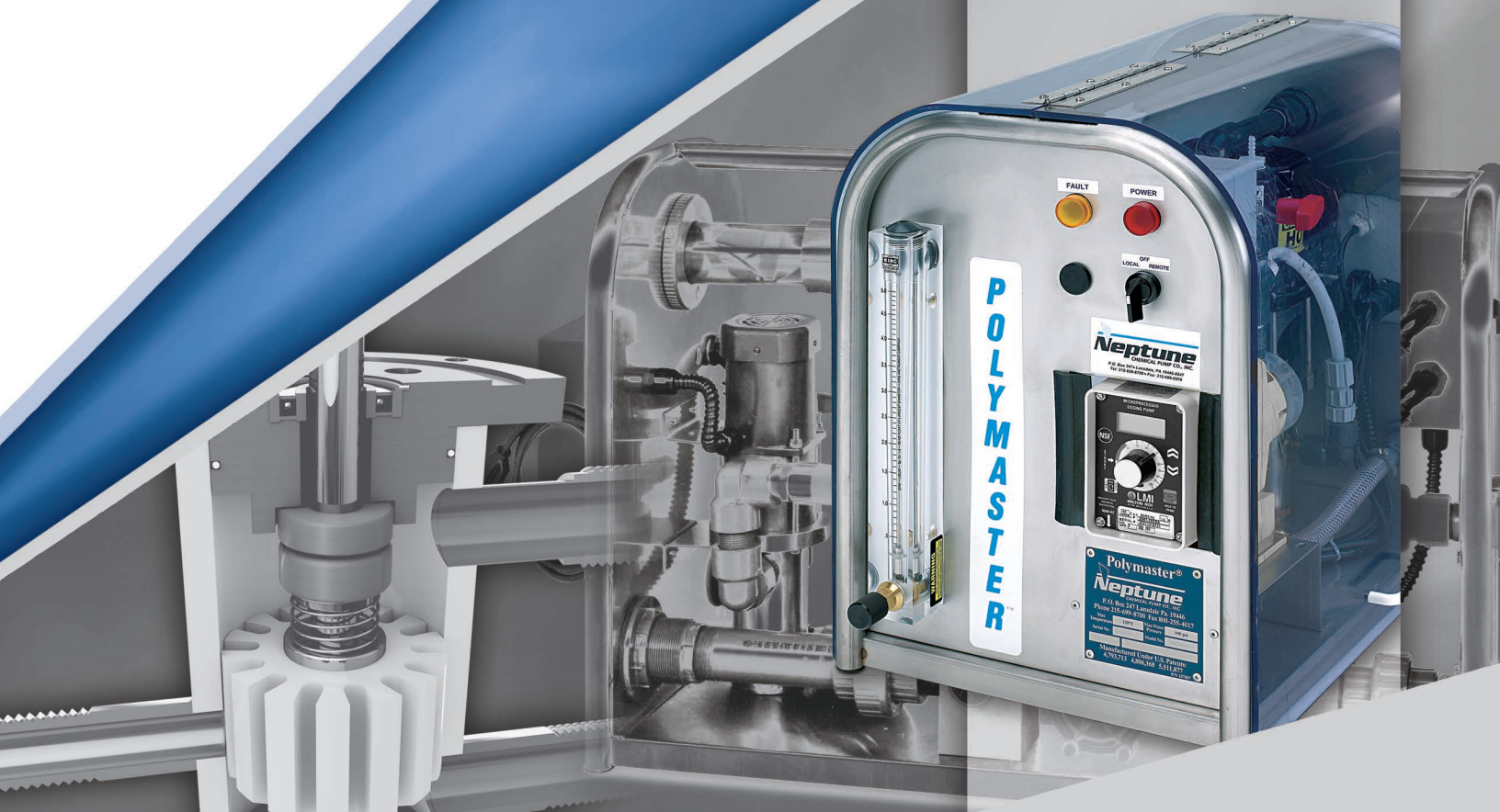




Polymaster™

Bulletin PM-13



Where Innovation Flows

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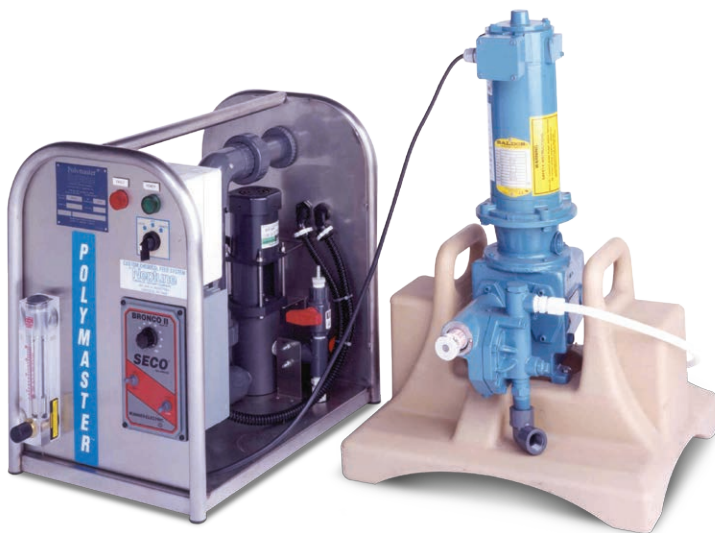


Polymaster™

Neptune Polymaster™ dilutes, mixes and thoroughly activates emulsion, dispersion and solution polymers, including new high-molecular-weight products.

Polymaster provides state-of-the-art polymer activation and blending through the use of the patented, motorized Gatlin distribution head.

Polymaster is simple, automatic and economical, providing better mixing and a higher degree of activation than similar machines, while being easier to operate and maintain.

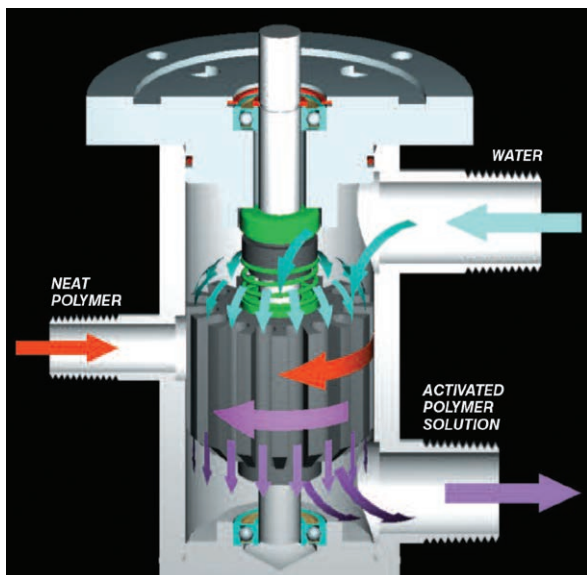
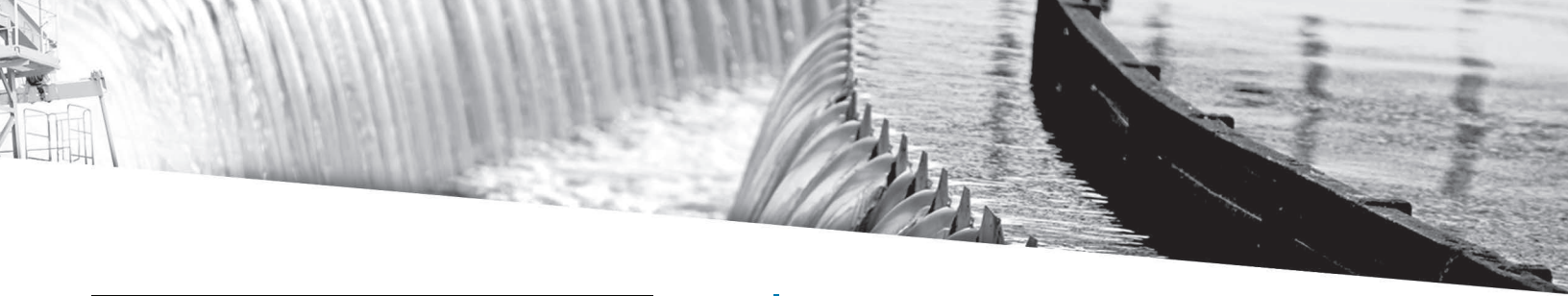


Remote pump models available. Allows use of the Polymaster™ with motor-driven pumps. Also allows remote mounting of pump for housekeeping purposes or to eliminate the need for separate polymer drum/storage tank at each point of polymer use.



Features

- Patented Gatlin Mixer
 - Provides maximum activation, with the degree of activation not affected by fluctuating water pressure
 - Eliminates the need for costly booster pumps
 - Contains no blades to damage fragile polymer chains
- Models available up to 189 lpm (50 gpm) dilute solution at concentrations from 0.1% to 2.0%
- Single and post-dilution models available
- Compact, lightweight, stainless-steel design allows portability if required
- Easy access to all components
- All electrical controls, pump controls, dilution water flow control and flow indication located on front panel
- Simple installation. Requires plug-in electrical connection plus connection to water and polymer supply lines and point of use
- Automatic shutdown and alarm on loss of dilution water.
- Manual or automatic models. Automatic units adjust polymer pump flow rate by pacing the speed of the polymer pump to an external 4-20 mA signal.
- Choice of electronic or motor-driven metering pumps, or progressing cavity pumps for polymer injection.



Gatlin Distribution Head

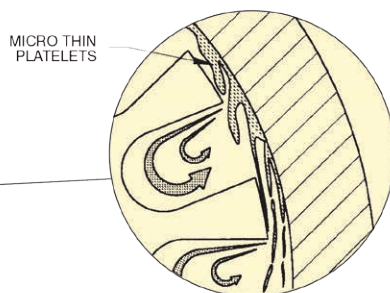
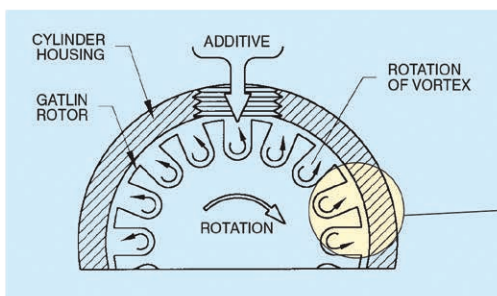
The patented, motorized Gatlin distribution head hydraulically segments polymer into ultra-thin film platelets, maximizing the polymer surface area exposed to dilution water, providing maximum activation. Degree of activation is not affected by fluctuating water pressures or dilution-water ratio changes.

How It Works

The Gatlin provides a rapid, high-energy initial introduction of polymer to water followed by gentle, low-shear mixing in a multi-stage static mixer.

The rotating, slotted head operates at close tolerance to the inner wall of the mixing chamber. The clearance does not permit fish eyes or gels to form. The slotted rotor creates a series of high-velocity vortexes without the use of turbine blades that can damage fragile polymer chains.

Superior performance proven repeatedly in side-by-side tests with other blending machines.



How to Size & Select

Follow these easy steps to select the correct Polymaster™ unit:

1. Determine the amount of neat polymer required. This will determine the pump size.
2. Determine the correct dilution ratio at which the polymer is to be used. This will determine the Polymaster™ model.
Example: 9.5 lph (2.5 gph) of liquid polymer is required. The desired application rate is a 0.5% solution (200:1 dilution). Therefore, a pump 9.5 lph (2.5 gph) or greater is required. The dilution water requirement is (200×9.5) 1,893 lph or (200×2.5) 500 gph.

3. Select correct Polymaster and pump combination.

Example: Decide if the unit is to be manual or automatic. Assuming an automatic model is desired, select an automatic Polymaster with greater than 1,893 lph (500 gph) water capacity: the Model PAD-600 is selected.

Select a pump with a capacity greater than 9.5 lph (2.5 gph): the 17 lph (4.5 gph) automatic pump (Model 107804A) is selected.

Order Polymaster Model PAD-600 with pump Model 107804A.

Polymaster™

Standard Models Selection Chart



Standard Automatic Units

The following models may be specified with any electronic metering pump from the chart below. Note: only electronic metering pumps may be used with standard units. Motor-operated diaphragm pumps, gear pumps or progressing cavity pumps must be used with remote units (see chart on opposite page).

4-20 mA Pump Control

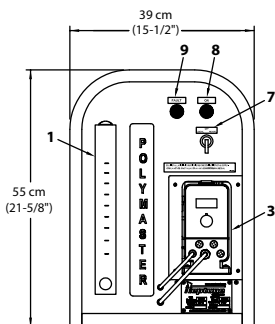
Model Number	Max Water Flow	A Polymer Inlet	B Dilution Water Inlet	C Mixed Solution Outlet
PAD-60	227 lph (60 gph)	1/2" FNPT	3/4" FNPT	3/4" FNPT
PAD-100	379 lph (100 gph)	1/2" FNPT	3/4" FNPT	3/4" FNPT
PAD-200	757 lph (200 gph)	1/2" FNPT	3/4" FNPT	3/4" FNPT
PAD-300	1,136 lph (300 gph)	1/2" FNPT	3/4" FNPT	3/4" FNPT
PAD-600	2,271 lph (600 gph)	1/2" FNPT	3/4" FNPT	1" FNPT
PAD-1200	4,543 lph (1,200 gph)	1/2" FNPT	1" FNPT	1 1/2" FNPT

Electronic Metering Pumps

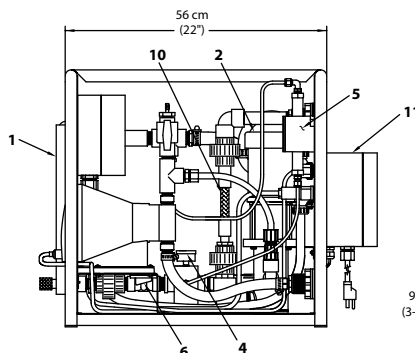
For Use With Automatic Polymasters™

Manual Stroke Length Control • Automatic 4-20 mA Speed Control

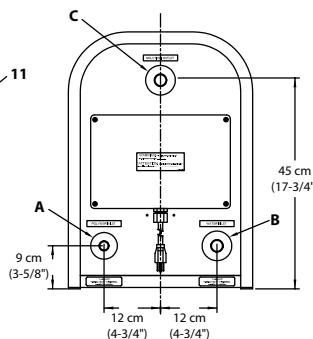
Model Number	Capacity	Max. Pressure
104717A	1.9 lph (0.5 gph)	9.7 bar (141 psi)
104718A	3.8 lph (1 gph)	7.6 bar (110 psi)
104719A	7.6 lph (2 gph)	3.4 bar (49 psi)
107804A	17 lph (4.5 gph)	3.4 bar (49 psi)
107805A	30.3 lph (8 gph)	4.1 bar (60 psi)



All Standard Models



Models PAD/PMD-60 to PAD/PMD-1200



All Models



All Models Except Post Dilution

Standard Manual Units

The following models may be specified with any electronic metering pump from the chart below. Note: only electronic metering pumps may be used with standard units. Motor-operated diaphragm pumps, gear pumps or progressing cavity pumps must be used with remote units (see chart on opposite page).

Manual Pump Control

Model Number	Max Water Flow	A Polymer Inlet	B Dilution Water Inlet	C Mixed Solution Outlet
PMD-60	227 lph (60 gph)	1/2" FNPT	3/4" FNPT	3/4" FNPT
PMD-100	379 lph (100 gph)	1/2" FNPT	3/4" FNPT	3/4" FNPT
PMD-200	757 lph (200 gph)	1/2" FNPT	3/4" FNPT	3/4" FNPT
PMD-300	1,136 lph (300 gph)	1/2" FNPT	3/4" FNPT	3/4" FNPT
PMD-600	2,271 lph (600 gph)	1/2" FNPT	3/4" FNPT	1" FNPT
PMD-1200	4,543 lph (1,200 gph)	1/2" FNPT	1" FNPT	1 1/2" FNPT

Electronic Metering Pumps

For Use With Manual Polymasters™

Manual Stroke Length Control • Manual Speed Control

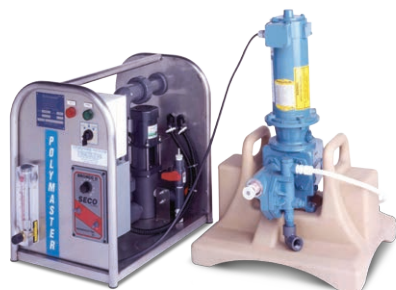
Model Number	Capacity	Max. Pressure
104717M	1.9 lph (0.5 gph)	9.7 bar (141 psi)
104718M	3.8 lph (1 gph)	7.6 bar (110 psi)
104719M	7.6 lph (2 gph)	3.4 bar (49 psi)
107804M	17 lph (4.5 gph)	3.4 bar (49 psi)
107805M	30.3 lph (8 gph)	4.1 bar (60 psi)

- 1 Water Flow Meter w/Rate Set Valve
- 2 Gatlin Mixer
- 3 Polymer Pump*
- 4 Water Pressure Gauge
- 5 Water Pressure Switch
- 6 Water Solenoid Valve
- 7 Sector Switch, Main Power
- 8 Red Run Light
- 9 Amber Fault Light
- 10 Static Mixer
- 11 Junction Box Power & Signal

*Motor-Speed Control for Remote Pump Units

Polymaster™

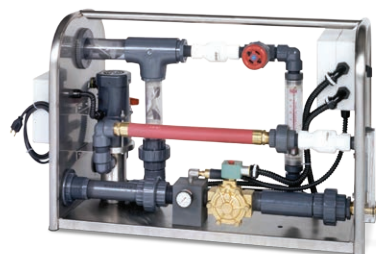
Remote Models Selection Chart



Remote Pump Automatic Units

The following models may be specified with any automatic electronic metering pump (see chart on opposite page) or with any motor-operated

metering pump from the automatic pump selection chart below. These models may also be used with progressing cavity type pumps.



Remote Pump Manual Units

The following models may be specified with any manual electronic metering pump (see chart on opposite page) or with any motor operated

metering pump from the manual pump selection chart below. These models may also be used with progressing cavity-type pumps.

4-20 mA Pump Control

Model Number	Max Water Flow	A Polymer Inlet	B Dilution Water Inlet	C Mixed Solution Outlet
PAD-1200R	4,543 lph (1,200 gph)	1/2" FNPT	1" FNPT	1 1/2" FNPT
PAD-3000R*	11,356 lph (3,000 gph)	1/2" FNPT	1 1/2" FNPT	2" FNPT

* Post Dilution Model provides 4,543 lph (1,200 gph) initial dilution, 6,814 lph (1,800 gph) post dilution, independent water control valve and flow rate indicator for each dilution stage.

Motor-Driven Metering Pumps

For Use With Remote Automatic Polymasters™

Manual Stroke Length Control • Automatic 4-20 mA Speed Control

Model Number	Capacity	Max. Pressure
532-VS-N3A	42 lph (11 gph)	6.9 bar (100 psi)
535-VS-N3A	68 lph (18 gph)	6.9 bar (100 psi)
547-VS-N3A	114 lph (30 gph)	6.9 bar (100 psi)

Manual Pump Control

Model Number	Max Water Flow	A Polymer Inlet	B Dilution Water Inlet	C Mixed Solution Outlet
PMD-1200R	4,543 lph (1,200 gph)	1/2" FNPT	1" FNPT	1 1/2" FNPT
PMD-3000R*	11,356 lph (3,000 gph)	1/2" FNPT	1 1/2" FNPT	2" FNPT

Motor Driven Metering Pumps

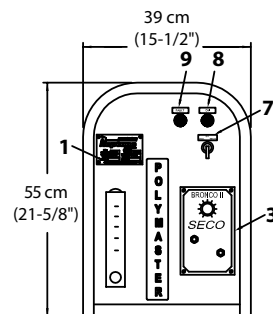
For Use With Remote Manual Polymasters™

Manual Stroke Length Control • Constant Speed Motor

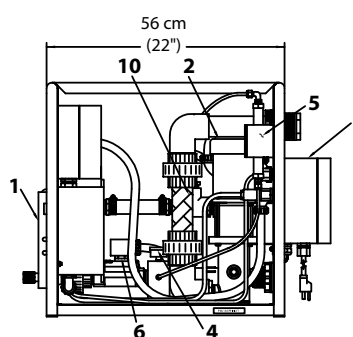
Model Number	Capacity	Max. Pressure
532-VS-N3M	42 lph (11 gph)	6.9 bar (100 psi)
535-VS-N3M	68 lph (18 gph)	6.9 bar (100 psi)
547-VS-N3M	114 lph (30 gph)	6.9 bar (100 psi)

Progressing Cavity Pumps May Be Used With Remote Automatic or Manual Polymasters™

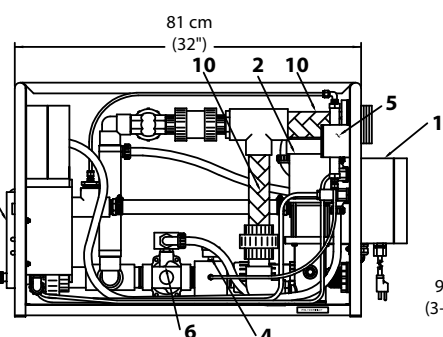
Advise type and size of existing pump and drive or specify requirements for new pump and drive.



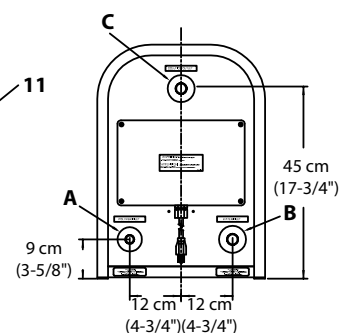
All Remote Models



Models PAD/PMD-1200R



Models PAD/PMD-3000R

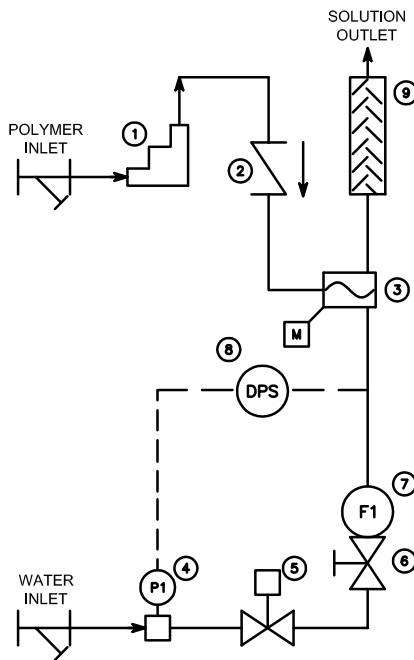


All Models

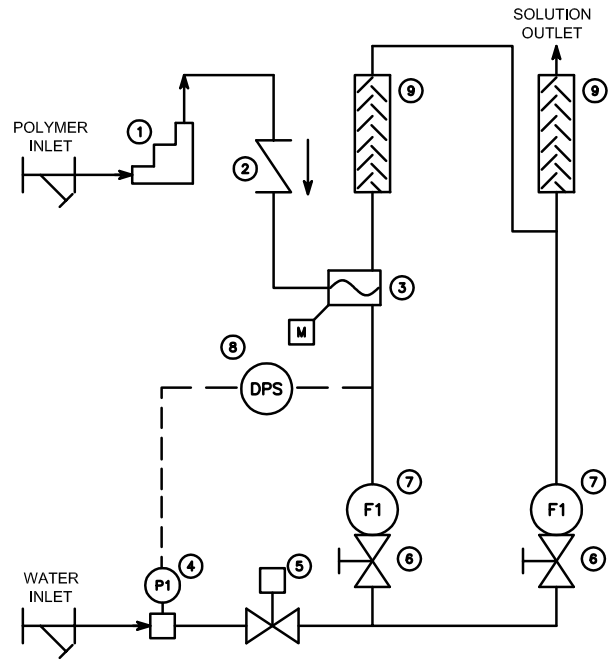
Flow Diagrams

Legend

- | | |
|----------------------------|--------------------------------------|
| 1 Polymer Metering Pump | 6 Dilution Water Adjusting Valve |
| 2 Injection/Check Valve | 7 Flowmeter |
| 3 Gatlin Distribution Head | 8 Water Differential Pressure Switch |
| 4 Water Pressure Gauge | 9 Static Mixer and Viewing Cylinder |
| 5 Solenoid Valve | |



All Models Except PAD-3000R & PMD-3000R



Models PAD-3000R & PMD-3000R

Specifications

Minimum water pressure required: 1.7 bar (25 psi)
 Maximum operating pressure: 6.9 bar (100 psi)
 Pressure drop across unit less than: 1.0 bar (15 psi)

Turndown ratio:

- **Water** 5:1
- **Polymer** 2:1 on stroke length (most models)
10:1 on speed
20:1 total

Water control includes:

- Rotameter for flow indication and adjustment
- Solenoid valve for on/off control
- Water pressure gauge
- Water differential pressure switch
- Water supply line strainer

Polymer control includes:

- Positive displacement metering pump with manual stroke length control and manual or automatic stroke speed control
- Polymer inlet line strainer
- Polymer injection check valve and back-pressure valve

Standard electrical controls include:

- NEMA 4X control enclosure and junction box
- Power cord and plug
- Terminal strip connection for 4-20 mA pacing signal (automatic units only)
- Local-off-remote selector switch and red running light. Terminals for remote start/stop interlock.
- Interlock for shutdown on loss of dilution water includes local amber fault light and remote alarm contact
- Local manual override of polymer flow rate

Power requirements:

- **Specify:** 1 phase, 115 volt, 60 Hz
OR 1 phase, 220 volt, 50 Hz
- Solenoid pump models: 5 amps @ 115 volt
- Motor-driven pump models: 15 amps @ 115 volt

Polymaster™ Accessories

Desiccant breather mounts to 19 mm (3/4") or 51 mm (2") bung on 208-liter (55-gallon) drum, preventing moisture-laden air from contaminating polymer. Particularly useful in low-feed-rate applications. *Model PB1*



Drum suction wand assembly mounts to 19 mm (3/4") bung for convenient feeding from drums. *Model PSW75*

Stainless-steel support stand allows elevation of unit to convenient working height where shelf, table or pedestal mounting is not available. Lower shelf on stand provides convenient mounting location for heavier motorized metering pumps.

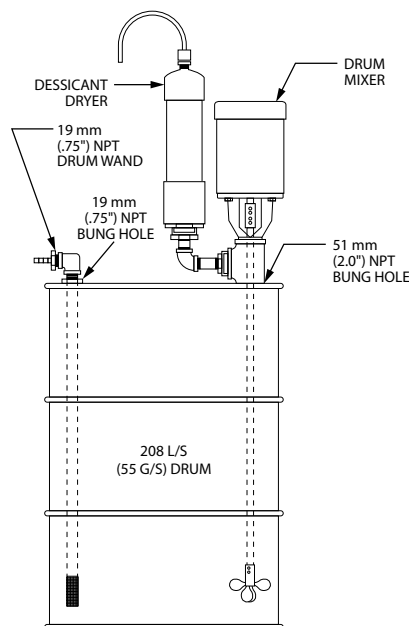
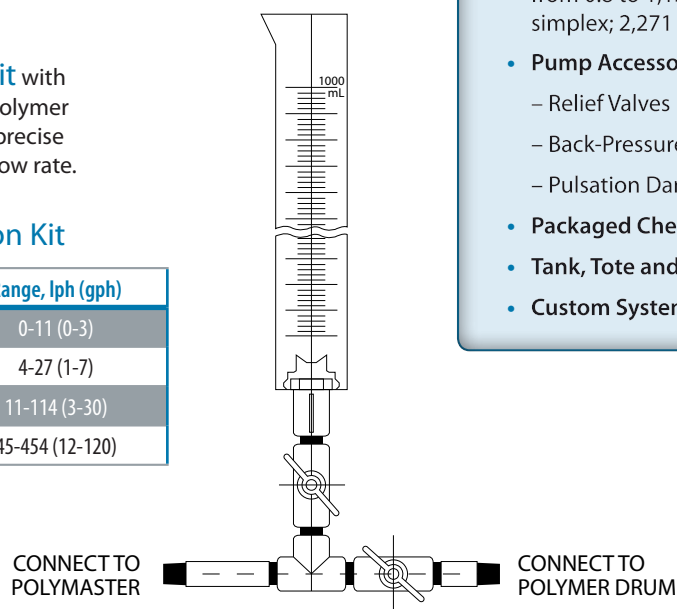
Model PST – for all models except models PAD/PMD3000R

Model PST-32 – Available for Models PAD/PMD3000R

Calibration column kit with isolation valves mounts in polymer pump suction line to allow precise determination of polymer flow rate.

Polymaster Calibration Kit

Part Number	Range, lph (gph)
CK-100	0-11 (0-3)
CK-250	4-27 (1-7)
CK-1000	11-114 (3-30)
CK-4000	45-454 (12-120)



Drum mixer mounts to 51 mm (2") bung, allowing occasional mixing of 55-gallon drums. Useful for re-mixing drums that have been stored or for mixing drums that are used in very low flow-rate applications.

Mixer/desiccant breather adapter allows mounting of both breather and drum mixer on the 51 mm (2") bung, reserving the 19 mm (3/4") bung for a polymer drum suction wand. *Model PMA*

Chemical Feed Products Available From Neptune

- **Metering Pumps**
from 0.8 to 1,136 lph (0.2 to 300 gph) simplex; 2,271 lph (600 gph) duplex
- **Pump Accessories**
 - Relief Valves
 - Back-Pressure Valves
 - Pulsation Dampeners
- **Packaged Chemical Feed Systems**
- **Tank, Tote and Drum Mixers**
- **Custom Systems With or Without Tanks**

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